

### Remarks

The above-referenced application has been reviewed in light of the Examiner's Office Action dated February 14, 2006. Claims 1, 7, 10, 11, 14 and 17-21 have been amended. Therefore, Claims 1 and 5-21 are currently pending in this application. The Examiner's reconsideration of the rejections is respectfully requested, particularly in view of the above amendments and the following remarks.

In accordance with the Office Action, Claims 1 and 5-21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by IEEE Publication Number 1080-1820/97 to Pasko et al. entitled "Optimization Method for Broadband Modem FIR Filter Design using Common Subexpression Elimination" (hereinafter "Pasko '97"). Claims 1, 7, 10, 11, 14 and 17-21 have been amended. No new matter has been added.

Each of Applicant's amended Claims 1, 7, 10, 11, 14 and 17-21 recite, *inter alia*, a "virtual common subexpression not originally common to any filter coefficients". Applicant defined the term "virtual common subexpression" in the application as originally filed (see Application at p.12, line 27 through p.13, line 2). Thus, a "virtual common subexpression **not originally common to any filter coefficients**" is a subexpression that was not originally common to any filter coefficients, but was instead "designed and changed ... by using an existing ... subexpression" "bit-shifted, bit-added, or bit-inverted ... into an artificial ... (or) virtual common subexpression" (*Id.*). The meanings of "bit-shifted", "bit-added"

and “bit-inverted” were described in the specification with respect to Figures 4, 5 and 6, respectively, as being single bit operations to synthesize a virtual common subexpression not originally common to any filter coefficients from an existing subexpression.

The Pasko '97 reference was previously discussed in Applicant's amendment filed on 22 April 2005. The applicability of that discussion is maintained, but said text will be omitted here for the sake of brevity. In addition, the Pasko '97 reference only shows the use of conventional common subexpressions **that are originally common to some filter coefficients** as discussed by Applicant in the application as originally filed (*see, e.g.*, Application at page 22, line 22 through page 23, line 10; *Id.* at Prior Art Figure 9). Pasko fails to teach or suggest a “virtual common subexpression not originally common to any filter coefficients” as presently claimed and originally disclosed by Applicant (*see, e.g.*, Application at p.12, line 27 through p.13, line 2; p.23, line 11 through p.24, line 22; *Id.* at Figure 8).

Applicant respectfully submits that the method of Pasko '97 is one of many methods known in the art for predetermining or preselecting a somewhat optimized subset (per design iteration) of the existing common subexpressions that are originally common to some filter coefficients to reduce adders, for example. On the other hand, Applicant's disclosure of virtual common subexpressions not originally common to any filter coefficients can further reduce the number of adders beyond what was contemplated by conventional methods, including those of Pasko et al.

For example, Applicant's embodiment of Figure 8 for a virtual common subexpression not originally common to any filter coefficients uses 21 fewer adders than the conventional example of Figure 9. The conventional example of Figure 9 is like the Pasko '97 reference in that a common subexpression that is originally common to some filter coefficients is used to detect or select existing common subexpressions. Thus, embodiments of Applicant's presently claimed invention with virtual common subexpressions not originally common to any filter coefficients may be applied following a conventional common subexpression elimination to further reduce hardware and/or processing requirements. Applied alone, the method of Pasko et al. would not result in the "virtual common subexpression not originally common to any filter coefficients" embodiment of Figure 8, for example, and as presently claimed.

Therefore, each of amended Claims 1, 7, 10, 11, 14 and 17-21 is neither taught nor suggested by the Pasko '97 reference, whether taken alone or in combination with any of the other references of record in this case.

## Conclusion

Accordingly, it is respectfully submitted that amended independent Claims 1, 7, 10, 11, 14 and 17-21 are in condition for allowance for at least the reasons stated above. Since the dependent Claims 5-6, 8-9, 12-13 and 15-16 each depend from the above claims and necessarily include the elements and limitations thereof, it is respectfully submitted that these claims are also in condition for allowance for at least the reasons stated, as well as for reciting additional patentable subject matter. All issues raised by the Examiner having been addressed, reconsideration of the rejections and an early and favorable allowance of this case are earnestly solicited.

Respectfully Submitted,



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